

CLAIMS

1. Method for the heat treatment of metallic strips comprising, inside a heat treatment chamber having a pressure greater than atmospheric pressure,
 - 5 - passing the strip through at least one heating zone of the chamber,
 - moving the strip through at least one cooling zone of the chamber, and
 - establishing a first protective gas atmosphere containing
10 nitrogen and a first hydrogen and/or helium content in the chamber, with the exception of at least one cooling zone, in which there is adjusted a second protective gas atmosphere containing nitrogen and a second hydrogen and/or helium content greater than the said first content,
 characterised in that it comprises
 - 15 - at least one introduction of nitrogen into the chamber,
 - at least one injection of protective gas containing a third hydrogen and/or helium content greater than the said second content into the said at least one cooling zone having the said second atmosphere
 - 20 - a gaseous exchange between at least one zone of the chamber having the said first atmosphere of protective gas and the said at least one cooling zone having the said second atmosphere, and
 - control of the flow rate of the said at least one introduction and the said at least one injection according to the gaseous exchange
25 between zones, the pressure of the chamber and the hydrogen and/or helium contents to be obtained in the said first and second protective gas atmospheres.
2. Method according to Claim 1, characterised in that the
30 protective gas containing the said third hydrogen and/or helium content is hydrogen gas or helium gas.

3. Method according to Claim 1, characterised in that the protective gas containing the said third hydrogen content is a gas containing hydrogen and nitrogen issuing directly from an industrial process, without any prior mixing step.

5 4. Method according to Claim 3, characterised in that the gas containing hydrogen and nitrogen is an ammonia cracking gas.

5. Method according to one of Claims 1 to 4, characterised in that it comprises the said at least one introduction of nitrogen into the chamber solely outside the said at least one cooling zone having the said
10 second atmosphere.

6. Method according to one of Claims 1 to 4, characterised in that it comprises the said at least one introduction of nitrogen into the chamber simultaneously outside the said at least one cooling zone having the said second atmosphere and in this zone.

15 7. Method according to any one of Claims 1 to 6, characterised in that the said first atmosphere contains a hydrogen and/or helium content of 3% to 5% by volume.

8. Method according to any one of Claims 1 to 7, characterised in that the said second atmosphere contains a hydrogen
20 and/or helium content of 5% to 25% by volume.

9. Method according to any one of Claims 1 to 8, characterised in that the pressure in the chamber is 1 to 3 mbar.

10. Method according to any one of Claims 1 to 9, characterised in that it comprises, in the said at least one cooling zone
25 having the said second atmosphere, an induction of protective gas into a recirculation circuit, its cooling and its putting back into circulation in this at least one zone from the said circuit.

11. Method according to any one of Claims 1 to 10, characterised in that total flow of atmosphere gas injected and introduced

is 400 to 1000 Nm³/h and in that the flow of recirculated gas is 1000 to 5000 times the flow of atmosphere gas injected and introduced.

12. Method according to any one of Claims 1 to 11, characterised in that, through the said flow control, it comprises, in the
- 5 said at least one cooling zone having the said second atmosphere, a maintenance of a pressure greater than the pressure in the chamber outside this cooling zone.